

REMARKS

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants have amended claim 7 to recite that the mold has a concave-convex pattern including a plurality of concave portions and convex portions, and that the release treatment is provided only on top surfaces of the convex portions. Note, for example, the sole full paragraph on page 8 of Applicants' specification, as well, e.g., as Fig. 6g and the corresponding description in connection therewith in the paragraph bridging pages 8 and 9 of Applicants' specification.

In addition, Applicants are adding new claims 8 and 9 to the application. Each of claims 8 and 9 recites a mold, being dependent respectively on claims 7 and 8. Claim 8 recites that the release treatment provides a mold-releasing layer only on the top surfaces of the convex portions of the mold, whereby the mold includes the mold-releasing layer only on the top surfaces of the convex portions; and claim 9 recites that the mold-releasing layer has a thickness smaller than a pattern depth of the mold. Note, for example, page 7 of Applicants' specification.

It is respectfully submitted that claims 8 and 9 belong to the Group designated by the Examiner as Invention III in the Office Action mailed May 2, 2006, and are to be considered on the merits in the present application.

Applicants respectfully submit that all of the claims being considered on the merits in the above-identified application patentably distinguish over the teachings of the references applied by the Examiner in rejecting claims in the Office Action mailed June 27, 2006, that is, the teachings of the U.S. patents

to Ongena, No. 4,668,460, and to Bettencourt, No. 6,171,091, and United States Patent Application Publication No. US 2002/0064575 to Miyakawa, et al, under the provisions of 35 U.S.C. §103.

It is respectfully submitted that these references as applied by the Examiner would have neither taught nor would have suggested such a mold as in the present claims, having a concave-convex pattern including a plurality of concave portions and convex portions, and wherein a release treatment is provided only on top surfaces of the convex portions of the mold. See claim 7.

In addition, it is respectfully submitted that the teachings of the applied references would have neither disclosed nor would have suggested such mold as in the present claims, having features as discussed previously in connection with claim 7, and moreover, wherein this release treatment provides a mold-releasing layer only on the top surfaces of the convex portions of the mold, whereby the mold includes the mold-releasing layer only on the top surfaces of the convex portions (claim 8); and/or wherein such mold-releasing layer has a thickness smaller than a pattern depth of the mold (see claim 9).

It is emphasized that according to the present invention the releasing treatment is applied only at top surfaces of the convex portions of the mold. By providing the mold-releasing agent selectively as in the present claims, columnar structures formed illustratively and not to be limiting can have a height three times as large as the depth of the mold, the columnar structure not being an exact transfer of the shape of the mold. As stated on page 8 of Applicants' specification, if the mold-releasing agent is formed even at the

concave portions of the mold, the resin would come off so smoothly during the release step that the concave-convex pattern of the mold would often be transferred exactly as is. Therefore, if the columnar structure of a desired shape is to be obtained with high reproducibility, the mold-releasing agent should be applied only to the convex portions of the mold.

Bettencourt discloses mold cavities and mold cavity inserts made of polymer, metals and combinations thereof, that can be used in a variety of molding applications. As one aspect therein, a replaceable mold cavity for a golf ball is described, the replaceable mold cavity including a support cup having a recess, and a plastic insert having a concave surface with an inverse dimple pattern of a golf ball, the plastic insert being disposed in the recess of the support cup. Note column 1, lines 15-17, and column 3, lines 56-61. See also column 3, lines 22-25 and 33-35. This patent discloses a technique for forming the replaceable mold cavity, in column 5, lines 8-28; this process includes molding all or a portion of the replaceable mold cavity from a plastic molding material, preferable plastics therefor including thermosetting plastic resins and thermoplastic resins, which plastics may be reinforced with filler materials for added strength, increased heat transfer and/or improved ball release properties.

It is respectfully submitted that Bettencourt would have neither taught nor would have suggested such mold as in the present claims, having the release treatment provided only on top surfaces of the convex portions, and advantages thereof in the product formed from the mold, as discussed previously. Clearly, Bettencourt would have neither disclosed nor would have suggested such mold wherein the release treatment provides a mold-

releasing layer only on the top surfaces of the convex portions, as in claim 8, or relative thicknesses of this layer and a pattern depth of the mold as in claim 9.

Ongena discloses a process of molding parts and coating them in the mold, which includes forming a substrate in any mold having at least two separable parts and at least partially curing the substrate to the degree that it has a surface receptive to a coating; and injecting the coating into the mold at a high pressure without reopening or reclosing the mold. The coated part is subsequently cured and removed. See column 2, lines 29-36. Note also column 2, lines 37-42. As applied by the Examiner, the coatings are disclosed as containing pigments, conductive materials such as carbon black, mold release agents such as dialkyl phosphates, initiators, catalysts, accelerators, flow agents, thickeners and other additives. See column 4, lines 42-68.

It is emphasized that in Ongena the article being formed includes the specified coatings. It is respectfully submitted that this reference would have neither taught nor would have suggested, and in fact would have taught away from, the presently claimed invention, including wherein the mold has been subjected to the release treatment; or, moreover, wherein a mold-releasing layer is provided as part of the mold. Furthermore, this reference would have neither taught nor would have suggested wherein the release treatment is provided only on top surfaces of the convex portions of the mold, or whereby the mold includes the mold-releasing layer only on the top surfaces of the convex portions, and advantages thereof as discussed previously. Furthermore, Bettencourt would have neither taught nor would have

suggested relative thicknesses of the mold-releasing layer and a pattern depth of the mold, as in claim 9.

Miyakawa, et al, discloses resin-cemented optical elements and a mold used for providing the elements. As described in paragraph [0013] on page 1 of this publication, the mold described in this published patent application has, on the outer periphery of the outside of a molding surface, a concavely curved surface which has a curvature larger than the molding surface. As applied by the Examiner, and described in paragraphs [0045] and [0046] on page 3 of this published patent application, the resin composition used in the optical element may appropriately optionally contain, in addition to the resin (or a precursor thereof), a polymerizing agent (curing agent), a polymerization initiator, a release agent, an anti-scratching agent and so forth. See also paragraph [0050] on page 3 of this published patent application.

It is respectfully submitted that Miyakawa, et al discloses that the resin composition of the optical element, forming the optical element in the mold, includes, inter alia, the release agent. It is respectfully submitted that this patent document does not disclose, nor would have suggested, and in fact would have taught away from, the release treatment being provided on portions of the mold, or, more particularly, wherein such release treatment is provided only on a top surface of the convex portions of the mold, as in claim 7, and additional features as in claims 8 and 9.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently in the application are respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR §1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (Case No. 1021.43681X0) and please credit any excess fees to such deposit account.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "William I. Solomon", with a long horizontal flourish extending to the right.

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Attachments